



AWSE SPRING WORKSHOP

MAY 20 – 22, 2007

SUN VALLEY, IDAHO

Kelvin Hickenbottom, P.E.
Deputy State Engineer
Nevada Division of Water
Resources



GIS and Water -
Location,
Enforcement,
Recording
Information

Or

How do I
work this
thing?!



WHAT TYPES OF DATA DO WE COLLECT

Reported by Applicants

- Point of Diversion
- Place of Use
- Manner of Use
- Diversion Data
- Dam locations and construction data

Collected by NDWR

- Diversion data
- Precipitation Data
- Irrigated Acreages
- Groundwater Levels
- Pumpage Data
- Stream discharge



WHY IS THE DATA REPORTED / COLLECTED

- Applications to appropriate water must be made to the State Engineer
- Applications to change existing rights must be made to the State Engineer to change POD, POU and / or MOU
- Approval to construct a dam must be obtained from the State Engineer, 20 / 20 rule



WHY IS THE DATA REPORTED / COLLECTED

Nevada Revised Statutes (NRS) 532 – 538, 543 and 544

- Adjudications
- Surface Water Appropriations
- Groundwater and Geothermal appropriations
- Permitting of Dams

HOW IS THE INFORMATION STORED

- Databases
 - SQL Server
 - ArcSDE
 - Personal geodatabases
 - Excel and other spreadsheet programs
 - Hard copy



Application Process – Readers Digest Version

- File Application, supporting map & fee
- 'Map Table' Review
- Send for publication
- Protest Period
- Hearing if required
- RFA – Ready for Action
- Send for permit fee/Deny Application
- Issue Permit



Approving An Application

- 4 criteria
 - Water available from proposed source
 - Does not conflict with existing rights
 - Cannot prove detrimental to the public interest
 - Protectible interest in domestic wells



Application Must Be Accompanied by a Map That:

- Is prepared by a Licensed Water Right Surveyor
- Identifies found corners
- Depicts the Point of Diversion within a 40 acre subdivision with a bearing and distance to a found corner.
- Clearly illustrates the Place of Use and township, range, section, and 1/16th section lines.



GIS Tools Used by NDWR

Then

- Colored Pencils
- Scales
- Protractors
- Copies of support maps filed with NDWR
- Hard copy USGS quadrangle maps

Now

- GPS Units
- MapGuide AutoCad Software
- ArcView and ArcInfo Software
- Field tablet PCs with AllTopo! software



GIS Tools Used by NDWR

“Now Continued”

- Colored Pencils
- Scales
- Protractors
- Copies of support maps filed with NDWR
- Hard copy USGS quadrangle maps



GIS Data Sets Commonly Used

- BLM PLSS and Land Status Data
- Digital Parcel Data from the Counties
- Digital Raster Graphics (DRGs) 7.5 USGS Quads
- Digital Orthophoto Quarter Quads USGS
- National Agricultural Imagery Program (NAIP)
- Geo-Referenced Scanned Images
- GoogleEarth



Training is Important!

Issues we have encountered include:

Data collection techniques and attributing the data

Using a standard datum

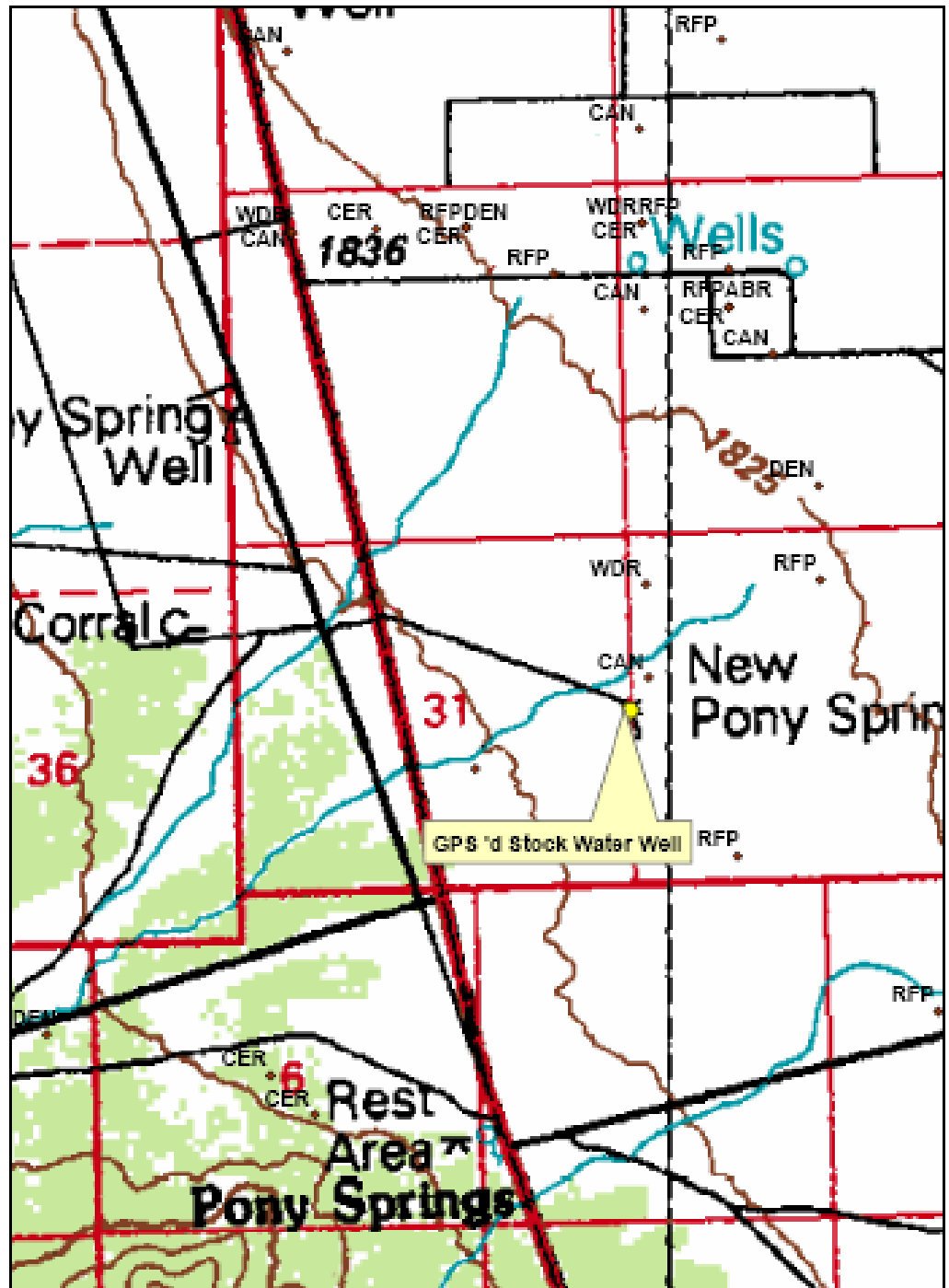
Getting staff to transfer the data when returning from the field



GPS data, along with use and water level information are collected by field personnel throughout the state.

GPS Data is Used to Verify Permit Status and Use of Points of Diversion

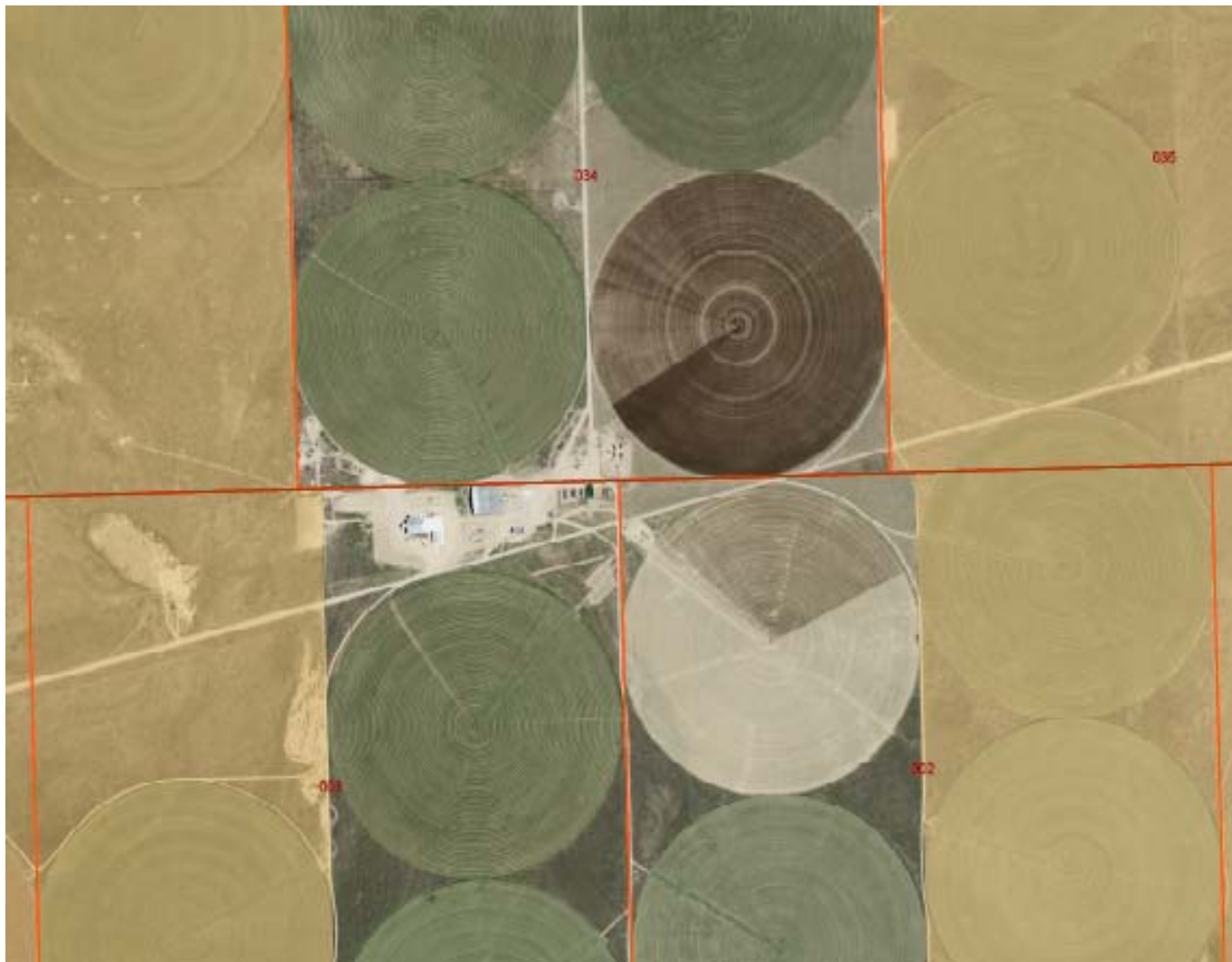
GPS data and use information collected by field personnel are compared with auto generated coordinates from NDWR's permit database to determine if an active right is associated with a given well.





Summer 2006 NAIP Data

Aerial and satellite imagery is also used for estimates of irrigated acres, verifying places of use, and estimating phreatophyte coverage , etc.



**Summer 2000 NDVI data with BLM Land Status
Overlay**

And comparing land use with BLM land ownership status.



What Inspires An Investigation

- Complaints from the public (Neighbor)
- Phone calls from attorneys
- Discovery of a questionable situation during field work



Investigations

As previously noted; investigations can be take place for many different reasons. Though the Division is progressing with digital capabilities, the process can, and often does, include a mix of “old” and “new” methods.

Investigations



Investigations



POR. SW ¼ SEC. 12, T18N - R19E

NE SW

BOOK 40-89

FAIRVIEW FARMS - UNIT NO. 2 (#432)

BOOK 40-49

BOOK 40-73

Office of Washoe County Assessor, Nevada - Robert W. McGowan

SE SW

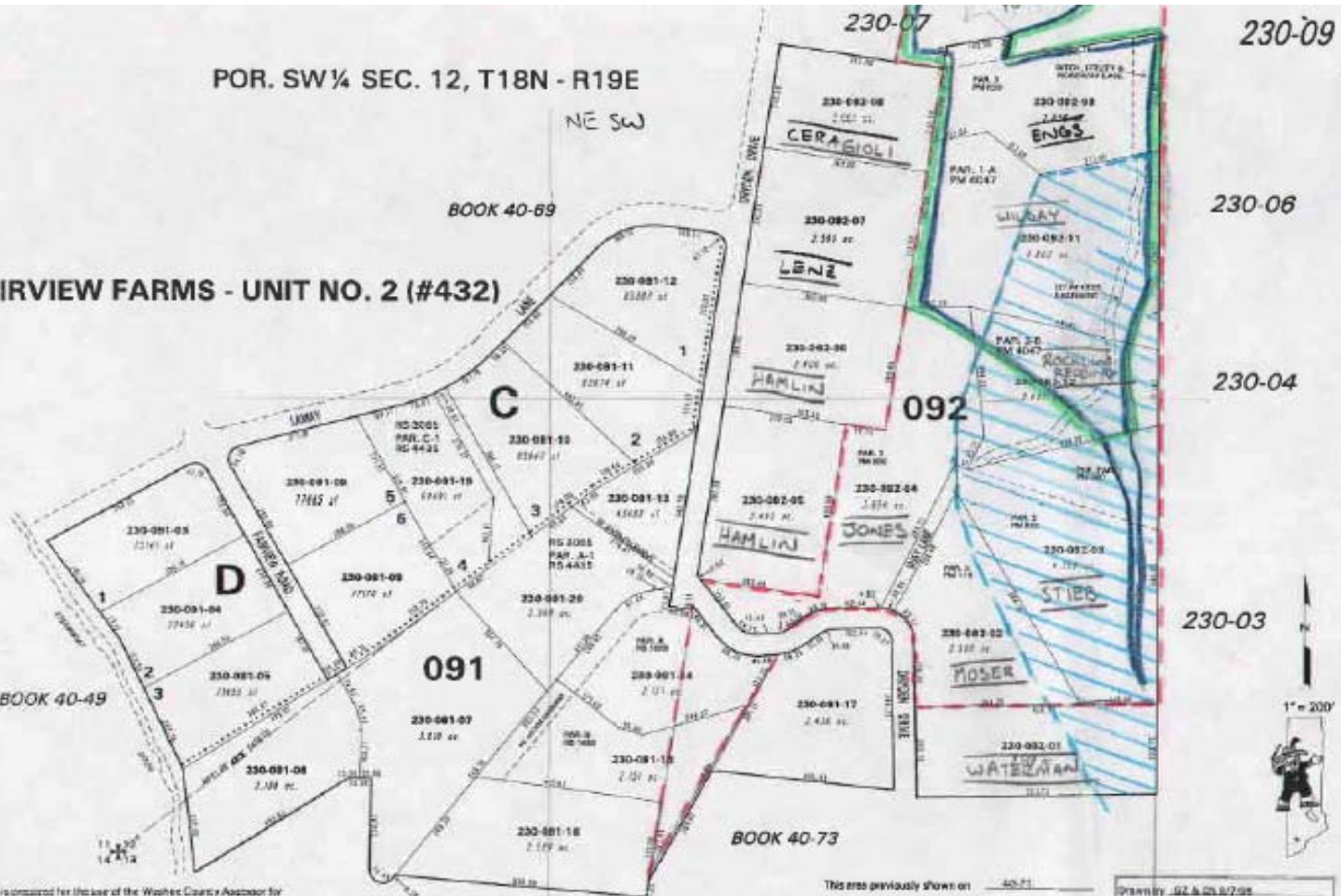
NOTE: This map is prepared for the use of the Washoe County Assessor for assessment and illustrative purposes only. It does not represent a survey of the premises. No liability is assumed as to the sufficiency or the accuracy of the data delineated hereon.

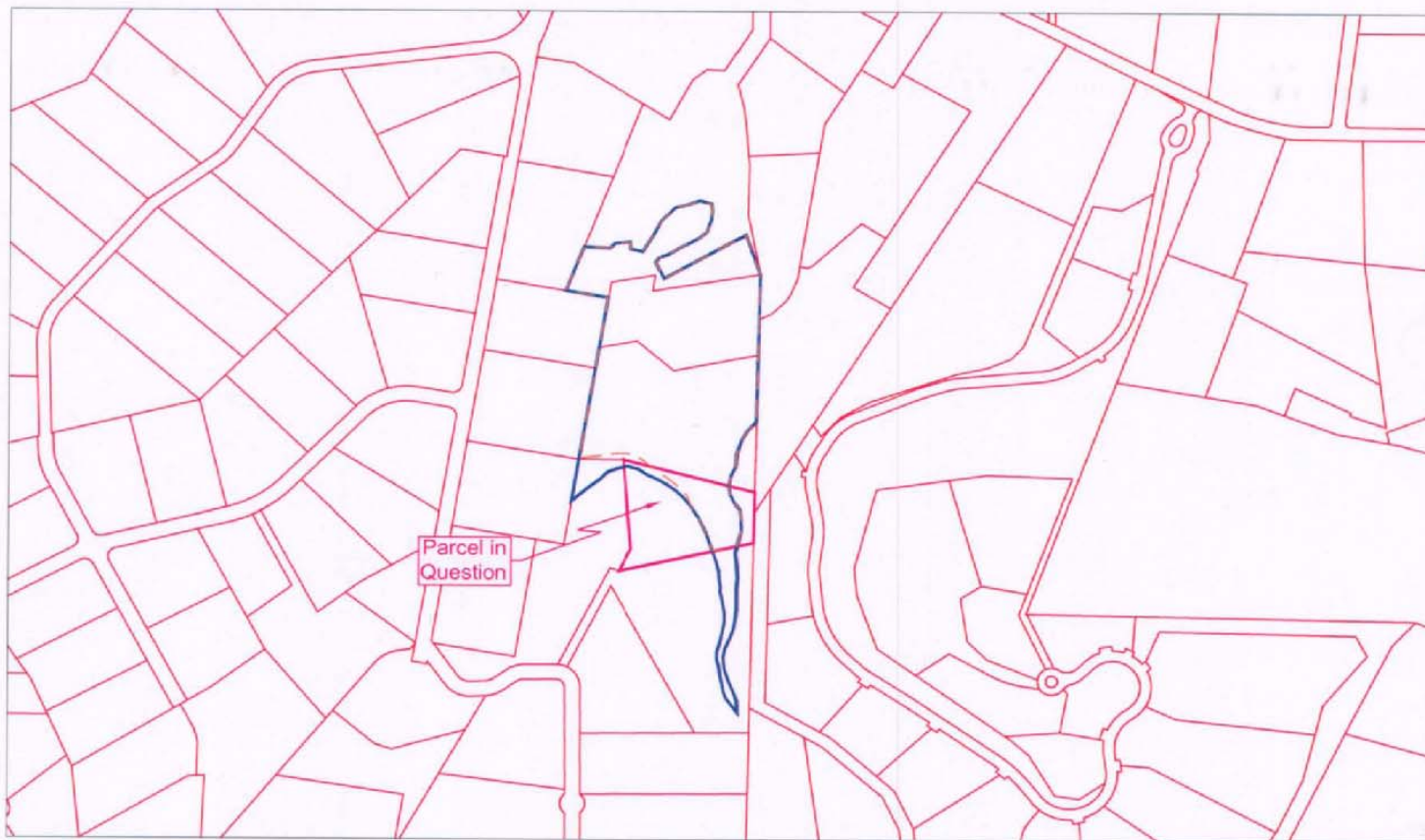
This area previously shown on 40-71

NOTE: Areas of parcels which are less than 2 acres are shown in red.

Drawn by JG & DL 8/7/95
Revised 1/88, 7/92, 9/94, 4/17/94

- FOO OF ORIGINAL APPLICATIONS 23384, 23383, 23382, 23381, 23380, 23379, 23378
- POU 23378
- POU 23381
- Truckee River Claim 72A





POU for 23378 (Cert. #7484) is in Blue

POU for 23381 (Cert. #7477) is in Orange



POU for 23378 (Cert. #7484) is in Blue
POU for 23381 (Cert. #7477) is in Orange



State Engineer's Options

The State Engineer can issue an order requiring an individual or entity to:

- Install measurement devices
- Cease and desist
- Plug and Abandon Illegal Wells
- Breach an Illegal Dam

IN THE OFFICE OF THE STATE ENGINEER
OF THE STATE OF NEVADA

1156

O R D E R

Nevada Land and Resource Co., LLC
3264 Goni Road, Suite 153
Carson City, Nevada 89706-7925
Certified Mail No. P 444 469 429

WHEREAS, the records of the Pershing County Assessor's Office show that Nevada Land and Resource Co., LLC is the owner of a parcel of land described by the Pershing County Assessor as Parcel Number 9-350-16 being Section 9, T.32N., R.38E., M.D.B.&M., in Grass Valley;

WHEREAS, a field investigation of Parcel Number 9-350-16 conducted by staff of the Nevada Division of Water Resources on September 29, 1999, found a well had been drilled and was being used to supply water to livestock;

WHEREAS, NRS 534.020(1), states "All underground waters within the boundaries of the state belong to the public, and, subject to all existing rights to the use thereof, are subject to appropriation for beneficial use only under the laws of this state relating to the appropriation and use of water, AND NOT OTHERWISE." (Emphasis added);

WHEREAS, the records of the Nevada Division of Water Resources show no groundwater right, as appropriated under NRS Chapters 533 and 534, has been issued on said parcel for any purpose;

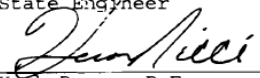
WHEREAS, the records of the Nevada Division of Water Resources show no claims of vested rights appurtenant to said parcel;

WHEREAS, no notice of intent to drill was submitted to the Nevada Division of Water Resources as required under Chapter 534.320 of the Nevada Administrative Code (NAC); and

WHEREAS, no log and record of work was submitted to the Nevada Division of Water Resources as required under NAC 534.340;

NOW THEREFORE, YOU ARE HEREBY ORDERED to plug and abandon this well in a manner pursuant to NAC 534.420 within thirty (30) days from the date of this order.

R. MICHAEL TURNIPSEED, P.E.
State Engineer



Hugh Ricci, P.E.
Deputy State Engineer

Dated at Carson City, Nevada this
6th Day of October, 1999.



SENATE BILL NO. 274—COMMITTEE ON NATURAL RESOURCES

(ON BEHALF OF THE LEGISLATIVE COMMISSION'S
COMMITTEE TO STUDY THE USE, MANAGEMENT,
AND ALLOCATION OF WATER RESOURCES)

Pending Changes

MARCH 13, 2007

The proposed bill provides the State Engineer with the authority to levy fines, order payment of costs and seek injunctive relief for certain violations.

GIS will most certainly participate in the implementation of these proposed changes and will be a key component in the State Engineer's Office enforcement efforts.

Referred to Committee on Natural Resources

SUMMARY—Makes various changes to provisions governing the State Engineer. (BDR 48-206)

FISCAL NOTE: Effect on Local Government: No.
Effect on the State: No.

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EXPLANATION – Matter in ***bolded italics*** is new; matter between brackets ~~omitted material~~ is material to be omitted.

AN ACT relating to water; expanding the purposes for which the State Engineer may adopt regulations; authorizing the State Engineer to impose administrative fines and to order payment of the costs of certain proceedings; authorizing the State Engineer to seek injunctive relief for certain violations; and providing other matters properly relating thereto.

**Thank You,
Questions?**